Lloyd's Register

Rules and Regulations for the Classification of Ships, July 2008

Notice No. 5

Effective Date of Latest Amendments:

See page 1

Issue date: Decemeber 2008

Lloyd’s Register is an exempt charity under the UK Charities Act 1993

Lloyd's Register, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the ‘Lloyd's Register Group’. The Lloyd's Register Group assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register Group entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

RULES AND REGULATIONS FOR THE CLASSIFICATION OF SHIPS, *July 2008*

Notice No. 5

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Ships, July 2008.* The amendments are effective on the dates shown:

Part	***Chapter***	***Section***	***Effective date***
1	2	1, 3	1 January 2009
1	3	9	1 January 2009
5	1	2	1 January 2009
5	2	6, 13, 14, 15, 18	1 January 2009
5	12	2, 7	1 January 2009
5	15	7	1 January 2009
5	17	6	Corrigenda
6	2	6	1 January 2009
7	4	2	Corrigendum

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Ships, July 2008* are to be read in conjunction with this Notice No. 5. The status of the Rules is now:

Rules for Ships	Effective date:	July 2008
Notice No. 1	Effective dates:	1 August 2008 & Corrigenda
Notice No. 2	Effective dates:	1 January 2009 &Corrigenda
Notice No. 3	Effective dates:	1 November 2008 & Corrigenda
Notice No. 4	Effective dates:	1 May 2007 & 1 July 2008
Notice No. 5	Effective dates:	1 January 2009 & Corrigenda

Part 1, Chapter 2

Classification Regulations

Effective date 1 January 2009

■ *Section 1*

Conditions for classification

1.1 General

1.1.12 Where a ship has been detained by Port State Control the Owner is to advise the Society immediately in order to arrange the attendance of a Surveyor.

■ *Section 3*

Surveys – General

3.11 Ownership details

3.11.1 It is the responsibility of each Owner to inform LR in writing of any change to its contact details and in the event of a ship sale to supply details of the new Owners. If the new Owner of a ship cannot be properly identified and the contact details established then the class of that ship will be specially considered by the Committee. It is the responsibility of the new Owner to inform LR in writing of their contact details and that they are now responsible for the ship, if they fail to do so then the class of that ship will be specially considered by the Committee.

Part 1, Chapter 3

Periodical Survey Regulations

Effective date 1 January 2009

■ *Section 9*

Ships for liquefied gases

9.7 Special Survey I (ships five years old) – General requirements

9.7.12 ~~Where considered necessary, insulated cargo gas and liquid pipelines are to have sections of insulation removed to ascertain the condition of the pipes. Care is to be taken that in the replacement of insulation, the outer vapour seal is made good.~~ Piping for cargo and process systems including valves, actuators and compensators are to be opened for examination. Insulation may need to be removed, as deemed necessary, to ascertain the condition of the piping. If any doubt exists regarding the integrity of the piping based upon visual examination then, where deemed necessary by the Surveyor, a pressure test at 1,25 times MARVS for the pipeline is to be carried out. The complete piping systems are to be tested for leaks after re-assembly.

9.10 Special Survey II and Special Surveys thereafter (ships 10 years old and over)

~~*9.10.4* Liquid cargo pipes are to be tested, by approved means, to a pressure equal to 1,25 times the working pressure. Alternatively, selected representative lengths may be removed for internal examination and hydraulic testing.~~

Existing paragraph 9.10.5 is to be renumbered 9.10.4.

Part 5, Chapter 1

General Requirements for the Design and Construction of Machinery

Effective date 1 January 2009

■ *Section 2*

Plans and particulars

2.2 Materials

2.2.2 Materials used in the construction of machinery and its installation should not be a recognised hazard to personnel. This includes the prohibition of asbestos except in the following applications:

(a) Vanes used in rotary vane compressors and rotary vane pumps.

(b) Watertight joints and linings used for the circulation of fluids when at high temperature (in excess of 350ºC) or pressure (in excess of ~~7 x 10^6 Pa~~ 70 bar (7 MPa)) there is a risk of fire, corrosion or toxicity.

(c) Supple and flexible thermal insulation assemblies used for temperatures above 1000ºC.

Part 5, Chapter 2

Oil Engines

Effective date 1 January 2009

■ *Section 6*

Crankcase safety fitting

6.1 Relief valves

6.1.3 Each valve is to be fitted with a flame arrester that permits flow for crankcase pressure relief and prevents the passage of flame following a crankcase explosion. The valves are to be type tested in a configuration that represent the installation arrangements that will be used on an engine and in accordance with Section 13 ~~a standard acceptable to LR~~. The valves are to be positioned on engines to minimise the possibility of danger and damage arising from emission of the crankcase atmosphere. Where shielding from the emissions is fitted to a valve, the valve is to be type tested to demonstrate that the shielding does not adversely affect the operational effectiveness of the valve.

■ *Section 13*

Type testing procedure for crankcase explosion relief valves

13.8 Design series qualification

(Part only shown)

13.8.3 The qualification of explosion relief valves of larger sizes than that which has been previously satisfactorily tested in accordance with 13.6 and 13.7 can be evaluated where valves are of identical type and have identical features of construction subject to the following:

(a) The free area of a larger valve does not exceed three times ~~±5~~ +5 per cent that of the valve that has been satisfactorily tested.

■ *Section14*

Type testing procedure for crankcase oil mist detection~~/~~ ~~monitoring~~ and alarm ~~arrangements~~ equipment

14.4 Equipment testing

(Part only shown)

14.4.2 The range of tests is to include the following for the detectors:

(g) EMC test ~~where susceptible~~.

14.5 Functional tests

■ *Section 15*
Electronically controlled engines

15.1 Scope

15.1.1 The requirements of this section are applicable to engines for propulsion, auxiliary ~~and~~ or emergency power purposes with software-based electronic control of fuel injection timing and duration, and which may also control air ~~and~~ or exhaust systems. Other systems with software-based electronic control, such as starting air, control air and cylinder oil lubrication systems when essential to the operation of the engine, are to be included and all applicable requirements of this Section are to be applied.

15.1.2 These engines may be of the slow, medium or high-speed type. They generally have no direct camshaft ~~to~~ driven fuel, air ~~and~~ or exhaust systems, but have common rail fuel/hydraulic arrangements and may have hydraulic actuating systems for the functioning of the ~~fuel,~~ air ~~and~~ or exhaust systems.

15.2 Plans and particulars

(Part only shown)
15.2.1 In addition to the plans and particulars required by Section 1 the following information is to be submitted:

(b) Details of hydraulic systems for actuation of sub-systems (fuel injection, air inlet ~~and~~ or exhaust), to include details of the design/construction of pipes, pumps, valves, accumulators and the control of valves/pumps. Details of pump drive arrangements are also to be included.

(d) A schedule of testing and trials to demonstrate that the engine is capable of operating as described in the design statement, and any testing required to verify the conclusions of the FMEA. The schedule is to include integration tests to verify that the response of the complete mechanical, hydraulic and electronic system is as predicted for all intended operational modes. The scope of these tests shall be agreed with LR for selected cases based on the FMEA required in (c).

(j) Evidence of type testing of the engine with electronic controls, or a proposed test plan at the engine builders with the electronic controls functioning, to verify the functionality and behaviour under all operating and fault conditions of the electronic control system.

■ *Section 18*
Program for trials of diesel engines to assess operational capability

18.1 Works trials (acceptance test)

18.1.1 Diesel engines which are to be subjected to trials on the test bed at the manufacturer's works and under attendance by the Surveyor(s) are to be tested in accordance with the scope of works trials specified in 18.1.2 to ~~18.1.9~~ 18.1.10. The scope of the trials is to be agreed between the LR Surveyor and the manufacturer prior to testing. At the discretion of the Surveyor, the scope of the trials may be extended depending on the engine application.

18.1.2 For electronically controlled engines integration tests are required, *see* 15.2.1(d).

Existing paragraphs 18.1.2 to 18.1.9 are to be renumbered 18.1.3 to 18.1.10

18.2 Shipboard trials

Table 2.18.2 Scope of shipboard trials for diesel engines *(Part only shown)*

~~Engines~~ Single main engines solely driving generators for propulsion		
Trial condition	Duration	Note
100% power (rated propulsion power) *see* 18.2.3	≥ 4 hours	(3) (4)
At normal continuous propulsion power	≥ ~~4~~ 2 hours	(3) (4)
110% power (rated propulsion power)	30 minutes	—
In reverse direction of propeller rotation at a minimum speed of 70% of the nominal propeller speed	10 minutes	(3) (4)
Starting manoeuvres	—	—
Monitoring, alarm and safety systems	—	—

NOTES
1. For main propulsion engines driving controllable pitch propellers, waterjets or reversing gears, the tests for main engines driving fixed-pitch propellers apply as appropriate.
2. Controllable pitch propellers are to be tested with various propeller pitches.
3. The tests are to be performed at rated speed with a constant governor setting.
4. Tests are to be based on the rated electrical powers of the electric propulsion motors ~~driven generators~~.

Part 5, Chapter 12

Piping Design Requirements

Effective date 1 January 2009

Section 2
Carbon and low alloy steels

2.12 Other mechanical couplings

2.12.11 Restrained slip-on joints are permitted in steam pipes with a design pressure of 10 bar or less on the weather decks of oil and chemical tankers to accommodate axial pipe movement, *see* Ch 13,2.7.

2.13 Non-destructive testing

Table 12.2.7 Application of mechanical joints *(Part only shown)*

Systems	Kind of connections		
	Pipe unions	Compression couplings (6)	Slip-on joints
Miscellaneous			
Starting/Control air (1)	+	+	–
Service air (non-essential)	+	+	+
Brine	+	+	+
CO_2 system	+	+	–
Steam	+	+	~~–7~~ +7

Section 7
Flexible hoses

7.2 Applications

7.2.3 Rubber ~~or plastics~~ hoses, with single, ~~or~~ double or more closely woven integral wire braid or other suitable material reinforcement, or convoluted metal pipes with wire braid protection, may be used in bilge, ballast, compressed air, fresh water, sea-water, oil fuel, lubricating oil, Class III steam, hydraulic and thermal oil ~~oil~~ systems. Flexible hoses of plastics materials for the same purposes, such as Teflon or Nylon, which are unable to be reinforced by incorporating closely woven integral wire braid are to have suitable material reinforcement as far as practicable. Where rubber or plastics hoses are used for oil fuel supply to burners, the hoses are to have external wire braid protection in addition to the integral wire braid. Flexible hoses for use in steam systems are to be of metallic construction.

Part 5, Chapter 15

Piping Systems for Oil Tankers

Effective date 1 January 2009

■ *Section 7*
Inert gas systems

7.1 General

7.1.1 The following requirements apply where an inert gas system, based on flue gas, is fitted on board ships intended for the carriage of oil in bulk having a flash point not exceeding 60°C (closed-cup test). ~~Any proposal to use an inert gas other than flue gas, e.g. nitrogen, will be specially considered.~~ For inert gas systems utilising nitrogen, additional requirements contained in 7.9 are to be applied.

7.1.4 The inert gas system is to comply with the requirements of Chapter 15 of the FSS Code, insofar as they are applicable, to new ships only. For the purposes of classification any use of the word "Administration" in the Regulation is to be taken as meaning LR.

7.1.5 Those parts of scrubbers, blowers, non-return devices, scrubber effluent and other drain pipes which may be subjected to corrosive action by the gases and/or liquids, are to be either constructed of corrosion resistant material or lined with rubber, glass fibre epoxy resin or other equivalent coating material.

7.1.6 The compartment in which any oil fired inert gas generator is situated is to be treated as a machinery space of Category A with respect to fire protection, *see also* Ch 1,4.8.

7.1.7 Arrangements are to be made to vent the inert gas from oil fired inert gas generators to the atmosphere when predetermined limits are reached, *see* 7.7.7(a) to (d), e.g., during start-up or in the event of equipment failure.

7.1.8 Automatic shut-down of the oil fuel supply to inert gas generators is to be arranged on predetermined limits being reached with respect to low water pressure or low water flow rate to the cooling and scrubbing arrangement and with respect to high gas temperature.

7.1.9 Automatic shut-down of the gas regulating valve is to be arranged with respect to failure of the power supply to the oil fired inert gas generators.

7.2 Gas supply

7.2.4 The system is to be capable of delivering inert gas to the cargo tanks at a rate of at least 125 per cent of the maximum rate of discharge capacity of the ship expressed as a volume to time rate.

7.9 Nitrogen generator systems

7.9.1 The following requirements are specific only to the gas generator system and apply where inert gas is produced by separating air into its component gases by passing compressed air through a bundle of hollow fibres, semi-permeable membranes or adsorber materials.

7.9.2 Where nitrogen generator systems are provided in place of boiler flue gas or oil fired inert gas generators referred to in 7.1, the following requirements of Chapter 15 of the FSS Code remain applicable for the piping arrangements, alarms and instrumentation downstream of the gas generator: 2.3.1.3.1, 2.3.1.3.2, 2.3.1.5, 2.3.2, 2.4.2, 2.4.3.1.6, 2.4.3.1.8, 2.4.3.1.9, 2.4.3.3, 2.4.3.4, 2.4.4, as well as SOLAS Reg.II-2/4.5.3.4.2, 4.5.6.3 and 11.6.3.4.

7.9.3 A nitrogen generator consisting of a feed air treatment system and any number of membrane or adsorber modules in parallel is to be capable of delivering nitrogen to the cargo tanks at a rate of at least 125 per cent of the maximum discharge capacity of the ship expressed as a volume to time rate.

7.9.4 The air compressor and the nitrogen generator may be installed in the engine room or in a separate compartment, which may be treated as an "other machinery space" with respect to fire protection.

7.9.5 Where a separate compartment is provided, it is to be positioned outside the cargo area and is to be fitted with an independent mechanical extraction ventilation system providing at least 6 air changes per hour. The compartment is to have no direct access to accommodation spaces, service spaces and control stations, and is to be provided with oxygen level detection equipment with a low oxygen level alarm.

7.9.6 The nitrogen generator is to be capable of delivering high purity nitrogen with oxygen content not exceeding 5 per cent by volume. The system is to be fitted with automatic means to discharge gas to the atmosphere during start-up and abnormal operation when predetermined limits are reached, *see* 7.9.16(a) to (e).

7.9.7 The system is to be provided with two air compressors. The total required capacity of the system is preferably to be divided equally between the two compressors, and in no case is one compressor to have a capacity less than 1/3 of the total capacity required. A system with one air compressor only may be accepted provided that sufficient spares for the air compressor and its prime mover are carried on board to enable their failure to be rectified by the ship's crew.

7.9.8 A feed air treatment system is to be fitted to remove free water, particles and traces of oil from the compressed air, and to maintain the specification temperature.

7.9.9 Where a nitrogen receiver/buffer tank is required to be fitted it may be installed in a dedicated compartment or in the separate compartment containing the air compressor and the generator or may be located in the cargo area. Where the nitrogen receiver/buffer tank is installed in an enclosed space, the access is to be arranged from the open deck only and the access door is to open outwards. Permanent ventilation and alarm arrangements are to be fitted as required by 7.9.5.

7.9.10 The oxygen-enriched air from the nitrogen generator and the nitrogen-product enriched gas from the protective devices of the nitrogen receiver are to be arranged to discharge to a safe location on the open deck.

7.9.11 In order to permit maintenance, means of isolation are to be fitted between the generator and the receiver.

7.9.12 At least two non-return devices are to be fitted in the inert gas supply main, one of which is to be of the double block and bleed arrangement. The second non-return device is to be equipped with positive means of closure.

7.9.13 Instrumentation is to be provided for continuously indicating the temperature and pressure of air:
(a) at the discharge of the compressor,
(b) at the inlet to the nitrogen generator.

7.9.14 Instrumentation is to be fitted for continuously indicating and permanently recording the oxygen content of the inert gas downstream of the nitrogen generator when inert gas is being supplied.

7.9.15 The instrumentation referred to in 7.9.14 is to be placed in the cargo control room where provided. Where no cargo control room is provided, the instrumentation is to be placed in a position easily accessible to the officer in charge of cargo operations.

7.9.16 Audible and visual alarms are to be provided to indicate:
(a) low feed-air pressure from compressor as referred to in 7.9.13(a),
(b) high air temperature as referred to in 7.9.13(a),
(c) high condensate level at automatic drain of water separator as referred to in paragraph 7.9.8,
(d) failure of electrical heater, if fitted,
(e) oxygen content in excess of that required in 7.9.6,
(f) failure of power supply to the instrumentation as referred to in 7.9.14.

7.9.17 Automatic shut-down of the system is to be arranged upon alarm conditions as required by 7.9.16(a) to (e).

7.9.18 The alarms required by 7.9.16(a) to (f) are to be fitted in the machinery space and cargo control room, where provided, but in each case in such a position that they are immediately received by responsible members of the crew.

7.10 Nitrogen/inert gas systems fitted for purposes other than inerting required by SOLAS Reg. II-2/4.5.5.1.1

7.10.1 This section applies to systems fitted on oil tankers of less than 20000 DWT.

7.10.2 The requirements of 7.9 apply except paragraphs 7.9.1, 7.9.2, 7.9.3 and 7.9.7.

7.10.3 Where the connections to the cargo tanks, to the hold spaces or to cargo piping are not permanent, the non-return devices required by 7.9.12 may be substituted by two non-return valves.

Part 5, Chapter 17

Requirements for Fusion Welding of Pressure Vessels and Piping

CORRIGENDA

■ *Section 6*
Non-Destructive Examination

6.1 General

6.1.1 Non-Destructive Examination (NDE) of pressure vessels and piping is to be performed in accordance with the requirements of Ch 13,4 and 5 of the Rules for Materials.

Part 6, Chapter 2

Electrical Engineering

Effective date 1 January 2009

■ *Section 6*
System design – Protection

6.5 Circuit-breakers

(Part only shown)

6.5.1 Circuit-breakers for alternating current systems are to satisfy the following conditions:

(a) the r.m.s. symmetrical breaking current for which the device is rated is to be not less than the r.m.s. value of the a.c. component of the prospective fault current, at the ~~first half cycle~~ instant of contact separation (i.e. first half cycle, or time of interruption where an intentional time delay is provided to ensure suitability);

~~*6.5.4* To satisfy 6.5.3, the rated service short-circuit breaking capacity of low voltage circuit-breakers:~~

- ~~directly connected to main or emergency switchboard; and/or~~
- ~~installed in the feeder lines for circuits used to provide essential or emergency services;~~

~~is to be not less than the prospective fault current referred to in 6.5.1(a). Low voltage circuit-breakers for other circuits may be selected on the basis of their rated ultimate short-circuit breaking capacity.~~

6.5.4 Circuit-breaker selection is, and ratings are, to be in accordance with the relevant requirements of IEC 60092-202: *Electrical installations in ships – System design – Protection*. Alternative methods acceptable to LR of selecting suitable circuit-breakers may be considered.

~~*6.5.5* The rated short-time withstand current of low voltage circuit-breakers which are required to have an intentional short-time delay under short-circuit conditions to ensure discriminative action with respect to other protective devices, is to be not less than the r.m.s. value of the a.c. component of the prospective fault current, at the first half cycle.~~

Part 7, Chapter 4

Dynamic Positioning Systems

CORRIGENDUM

■ *Section 2*
Class notation DP(CM)

2.1 General

2.1.1 For assignment of **DP(CM)** notation, the requirements of 2.1.2 and 2.2 to ~~2.4~~ 2.5 are to be complied with.

Section numbering in brackets reflects any Section renumbering necessitated by any of the Notices that update the current version of the Rules for Ships.

Part 5, Chapter 2

Table *2.18.2* *Reference* 18.1.6 *now reads* 18.1.7.

© Lloyd’s Register, 2008
Published by Lloyd’s Register
Registered office
71 Fenchurch Street, London, EC3M 4BS
United Kingdom